

CORNHUSKER ARMY AMMUNITION PLANT

INSTALLATION ACTION PLAN



FY2005



Printed on Recycled Paper

Table of Contents

Table of Contents	1
Statement of Purpose/Contributors	2
Acronyms & Abbreviations	3

SUMMARY

Installation Action Plan Summary	1
----------------------------------------	---

INSTALLATION INFORMATION & DESCRIPTION

Installation Information	1
Installation Description	2
Site Location Map	3

CONTAMINATION ASSESSMENT

Contamination Assessment	1
Previous Studies	3

SITE DESCRIPTIONS

Operable Unit 1	1
CAAP-010 OU1 GROUNDWATER	2
Operable Unit 2	4
Operable Unit 3	5
CAAP-008 MOTOR POOL (OU3)	6
CAAP-009 UNDERGROUND STORAGE TANKS (INSTALL-WIDE)	7
Operable Unit 4	8
CAAP-001, -002 LOAD-LINES 1 - 5	9
Operable Unit 5	11
CAAP-005 DEMO AND BURNING GROUND (OU5)	12
Response Complete Sites	13
CAAP-003 NON-ACTIVE DEMO DEBRIS LANDFILL (OU3)	14
CAAP-004 CLAY PIT DISPOSAL AREA (OU3)	15
CAAP-004 CLAY PIT DISPOSAL AREA (OU 4)	17
CAAP-006 SWWTP (OU2)	18
CAAP-007 CISD SANITARY WWTF (OU2)	19
CAAP-008 MOTOR POOL (OU3)	20
CAAP-001 - CAAP-002 PINK WATER DISPOSAL PITS	21

SCHEDULE

Past/Current/Projected Milestones	1
No Further Action Sites	2
Schedule Chart	4

REMEDIATION ACTIVITIES

Past/Current/Future Removal/Interim Remedial Action/Remedial Action Assessment	1
--------------------------------------------------------------------------------------	---

COMMUNITY INVOLVEMENT

Restoration Advisory Board Status	1
-----------------------------------------	---

Statement of Purpose

The purpose of the Installation Action Plan (IAP) is to outline the total multi-year restoration program for this installation. The plan will define Installation Restoration Program (IRP) requirements and propose a comprehensive approach and associated costs to conduct future investigations and remedial actions at each Operable Unit (OU) at the installation and other areas of concern.

In an effort to coordinate planning information between the IRP manager, installations, executing agencies, regulatory agencies, and the public, an IAP has been completed for the Cornhusker Army Ammunition Plant (CHAAP). The IAP is used to track requirements, schedules and tentative budgets for all major Army installation restoration programs.

All site specific funding and schedule information has been prepared according to projected overall Army funding levels and is therefore subject to change during the document's annual review. Under current project funding, the last remedies will be in place at the CHAAP by the end of 2008.

Contributors

The following agencies/personnel contributed to the formulation and completion of the 2005 Installation Action Plan for Cornhusker AAP:

USACE - Environmental Project Manager

EEL for US Army Environmental Center

Cornhusker AAP Environmental Program Manager/On-site POC

Acronyms & Abbreviations

ABA	Abandoned Burn Area
AEC	Army Environmental Center
AEDB-R	Army Environmental Database - Restoration (formerly DSERTS)
ALF	Abandoned Landfill
ADRA	Ammunition Demilitarization and Renovation Area
AMC	Army Materiel Command
ATSDR	Agency for Toxic Substances and Disease Registry
CAAP	Cornhusker Army Ammunition Plant (changed to CHAAP)
CERCLA	Comprehensive Environmental Response Compensation and Liability Act
CHAAP	Cornhusker Army Ammunition Plant
CPNRD	Central Platte Natural Resources District
CRS	Cornhusker Railcar Services
Cr	Chromium
Cu	Copper
CY	Calendar Year
DCE	Deputy Commanding Engineer
DDESB	Department of Defense Explosive Safety Board
DERA	Defense Environmental Restoration Account
DERP/MIS	Defense Environmental Restoration Program/Management Information System
DMA	Demolition Area
DNT	2,4 Dinitrotoluene
DRMO	Defense Reutilization and Marketing Office
DRMS	Defense Reutilization and Marketing Service
DSA	Diesel Spill Area
DSERTS	Defense Site Environmental Restoration Tracking System (now AEDB-R)
EBS	Explosive Buildings
EFFTF	Existing Fire-Fighting Training Facility
ENSR	Environmental Contractor
EPA	Environmental Protection Agency
ER,A	Environmental Restoration, Army (formerly DERA)
EPIC	Environmental Photographic Interpretation Center
ESD	Explanation of Significant Difference
FD-A	Fuel Disposal Site A
Fe	Iron
FFA	Federal Facilities Agreement (same as IAG)
FFSRA	Federal Facility Site Remediation Agreement
FS	Feasibility Study
FY	Fiscal Year
GAC	Granular Activated Carbon
GO/CO	Government-Owned/Contractor-Operated
gpm	gallons per minute
HMX	Cycloteramethylenetrinitramine
HRS	Hazard Ranking Score
IAG	Interagency Agreement (same as FFA)
IAP	Installation Action Plan
IOC	Industrial Operations Command (now OSC)
IRA	Interim Remedial Action
IRIP	Installation Restoration Incineration Program
IRP	Installation Restoration Program

Acronyms & Abbreviations

JMC	Joint Munitions Command
K	Thousand
LAP	Load, Assemble, and Pack
LRIP	Last Remedy In Place
LTM	Long-term Monitoring (Post RA)
M	Million
MCL	Maximum Contaminant Level
NDEQ	Nebraska Department of Environmental Quality
MEC	Munitions and Explosives of Concern
MMRP	Military Munitions Response Program
NB	Nitrobenzene
NE	Not Evaluated
NEB	Non Explosive Building
NFA	No Further Action
OB/OD	Open Burn/Open Detonation
OE	Ordnance and Explosives
OPM	Operational Periodic Monitoring (pre-RA)
OSC	Operations Support Command (replaced IOC)
OU	Operable Unit
PA	Preliminary Assessment
PAH	Polycyclic Aromatic Hydrocarbons
Pb	Lead
PEB	Potential Explosive Building
POL	Petroleum, Oil and Lubricants
PP	Proposed Plan
ppb	parts per billion
ppm	parts per million
RA	Remedial Action
RA(C)	Remedial Action (Construction)
RA(O)	Remedial Action (Operation)
RAB	Restoration Advisory Board
RBC	Risk Based Concentrations
RCRA	Resource Conservation and Recovery Act
RD	Remedial Design
RDX	Cyclonite: Royal Demolition Explosives
REM	Removal
RI	Remedial Investigation
RIP	Remedy in Place
ROD	Record of Decision
RRSE	Relative Risk Site Evaluation
Sb	Antimony
SI	Site Investigation
SOC	Statement of Condition
SOP	Standard Operating Procedures
STP	Sewage Treatment Plant
SWMU	Solid Waste Management Unit
SVOC	Semi-Volatile Organic Compounds
TCA	Trichloroethane
TCE	Trichloroethylene

Acronyms & Abbreviations

TNB	1,3,5 Trinitrobenzene
TNT	Trinitrotoluene
TPH	Total Petroleum Hydrocarbons
TRC	Technical Review Committee
ug/g	microgram per gram
ug/l	microgram per liter
USACHPPM	United States Army Center for Health Promotion and Preventive Medicine
USACE	United States Army Corps of Engineers
USAEC	United States Army Environmental Center
USAEHA	United States Army Environmental Hygiene Agency (replaced by USACHPPM)
USATHMA	United States Army Toxic and Hazardous Material Agency (replaced by AEC)
UST	Underground Storage Tank
UXO	Unexploded Ordnance
VOC	Volatile Organic Compound

Summary

STATUS	Cornhusker AAP has been on the NPL since 22 July 1987 with a HRS of 51.3		
NUMBER OF AEDB-R SITES:	66 AEDB-R sites	1 MMRP site	
	3 Active ER,A Eligible Sites		
	61 Response Complete ER,A Eligible		
DIFFERENT AEDB-R SITE TYPES:	59 Disposal Pits/Dry Well	2	ASTs
	1 Contaminated Groundwater	2	Waste Treatment Plants
	1 Landfill	1	Burn Area
CONTAMINANTS OF CONCERN:	Explosives, Semi-volatiles, Volatiles, Total Petroleum Hydrocarbons, Metals		
MEDIA OF CONCERN:	Groundwater and Soil		
COMPLETED REM/IRA/RA:	<ul style="list-style-type: none"> Waterline extension (Dec 86 & 94) \$8,000. K Soils incineration (Aug 88) \$10,500 K Hotspot Removal (Jun 94) \$1,200 K OU1 Groundwater Treatment Plant (Dec 98) \$9,000 K 		
CURRENT IRP PHASES:	RA(O) at 1 site LTM at 2 sites		
PROJECTED IRP PHASES:	RA(O) at 1 site LTM at 1 site		
IDENTIFIED POSSIBLE REM/IRA/RA:	IRA for RDX groundwater plume at 1 site, pump and treat UXO removal by the MMRP Office 1 site (Burning Ground OU5)		
DURATION:	YEAR OF IRP INCEPTION: 1980 YEAR OF RA COMPLETION EXCLUDING LTM: 2008 REMOVAL FROM THE NPL: 2020 YEAR OF IRP COMPLETION INCLUDING LTM: 2027		

Installation Information

SITE DESCRIPTION:

CHAAP is located approximately 2 miles west of Grand Island, NE, and consists of 4,000 acres of land. The current working population at the facility is one civilian. The plant was operated intermittently over a period of over 30 years from 1942 to 1974 and has remained inactive since 1974 to date. The working population exceeded 5,000 personnel during past production activities. The facility maintenance contract was terminated in 1990 following the facility's addition to the property excess list. Currently, activities at CHAAP are limited to maintenance operations, leasing of property for agriculture, leasing of buildings for storage pending final disposal. The area surrounding CHAAP is primarily rural with the town of Grand Island (population 44,000) two miles east.

COMMAND ORGANIZATION:

MAJOR COMMAND: U.S. Army Corps of Engineers
SUBCOMMAND: U.S. Army Engineer District - Omaha
INSTALLATION: Cornhusker AAP Installation

IRP EXECUTING AGENCIES:

OVERSIGHT: U.S. Army Corps of Engineers
ACTION PHASE: U.S. Army Corps of Engineers, Omaha District,

REGULATORY PARTICIPATION:

FEDERAL: U.S. Environmental Protection Agency, Region VII, Remedial Project
STATE: Nebraska Department of Environmental Quality, Remediation Section,

REGULATORY STATUS:

- NPL Effective Date: 22 Jul 87
- FFA 04 Sept 90
- TRC Started: 07 Nov 91
- OU1 ROD, 18 Nov 94
- OU-2 ROD Sep 1998
- Constructed Pump & Treatment Plant, OU-1 Dec 1998
- OU-3 ROD Dec 1999
- OU-4 ROD Feb 2000
- OU1 ROD Amendment Sep 2001
- Project removal from NPL: FY 2020
- CERCLA Five Year Review completed

MAJOR CHANGES TO IAP FROM PREVIOUS YEAR:

- Transfer CAAP-005 to MMRP, due to OE

Installation Description

Current Activity Status:

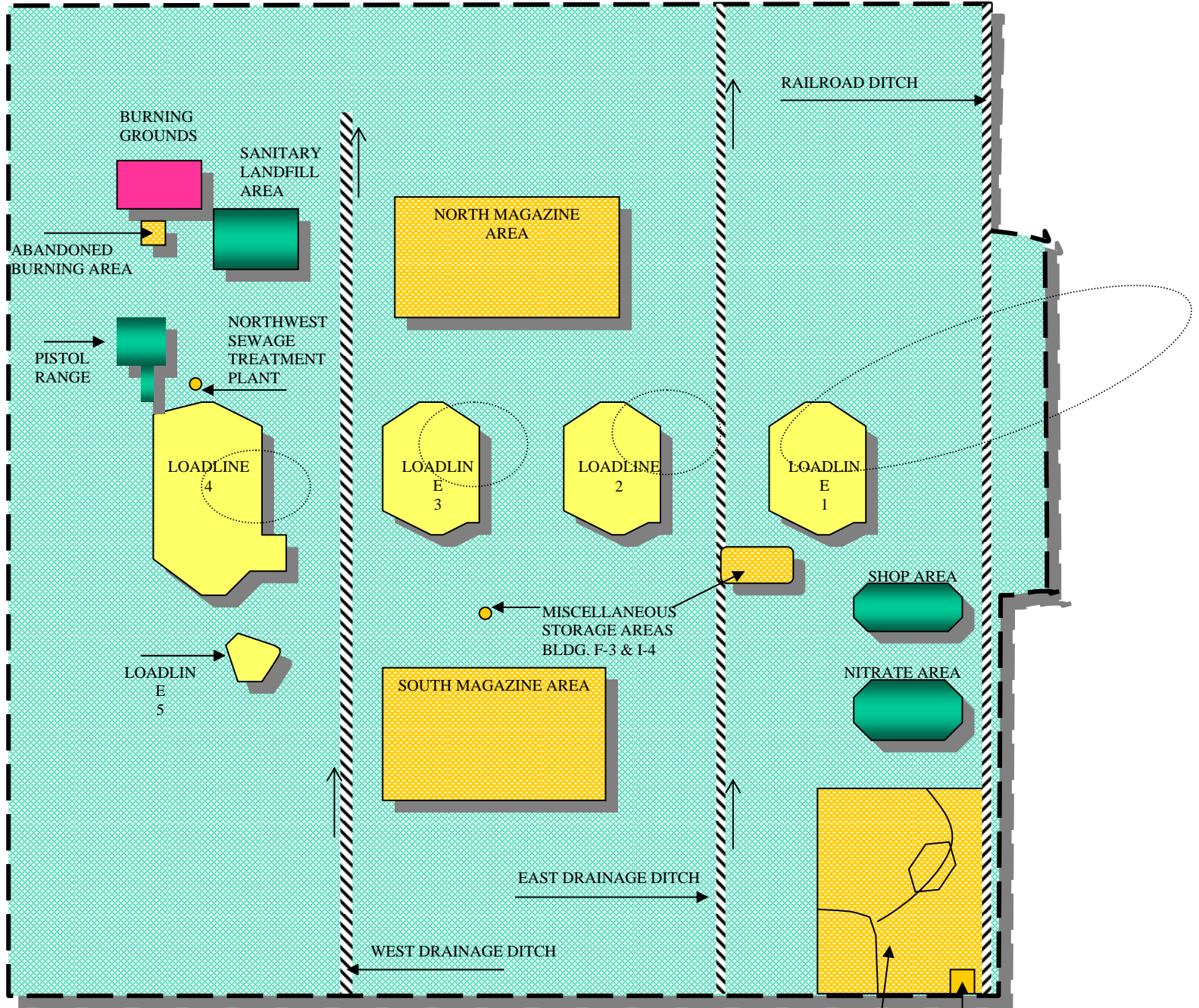
Current activities at the facility reflect declining industrial and agricultural lease base. The local community has formed a reuse committee to guide the excessing of the facility, in accordance with the 1994 public law requiring the committee to excess the facility in accordance with the "Comprehensive Reuse Plan for the Cornhusker Army Ammunition Plant," dated 30 December 97. Approximately 33% of CHAAP remains for sale to designees.

Historic Activity Information:








CHAAP was constructed for the production of artillery, bombs, boosters and supplementary charges for World War II. The plant was operated intermittently over a period of 30 years, being activated for munitions production from 1942 to 1945 (World War II), 1950 to 1957 (Korean Conflict) and 1965 to 1973 (Vietnam Conflict). In addition, between 1945 and 1948, the ammonium nitrate area, formerly used for nitrates production, was used for the production of fertilizer. The most recent operations terminated in 1974. Land disposal began in 1999.

Regulatory Status:

The installation was listed on the National Priorities List (NPL) on 22 July 1987 due to the waste disposal procedures at the load-line cesspools and leach pits from disposal of wastes. CHAAP was placed on the NPL with a Hazard Ranking Score of 51.13. A Federal Facility Agreement (FFA) was signed by the U.S. Environmental Protection Agency (EPA) Region VII, the Nebraska Department of Environmental Quality (NDEQ) and the Army, effective 4 September 1990.



LEGEND

-  FACILITY BOUNDARY
-  DRAINAGE DITCH FLOW DIRECTION
-  AREAS OF CONCERN DESIGNATED AS OU1 (Outline of area where RDX is detected in alluvial aquifer monitoring wells)
-  AREAS OF CONCERN DESIGNATED AS OU2
-  AREAS OF CONCERN DESIGNATED AS OU3
-  AREAS OF CONCERN DESIGNATED AS OU4
-  AREAS OF CONCERN DESIGNATED AS OU5

Contamination Assessment

In March 1980, an installation assessment of CHAAP was completed by the United States Army Toxic and Hazardous Materials Agency (USATHAMA). Based on the findings of that report, subsequent investigations confirmed the presence of munitions contamination and migration of contaminants. Subsequent investigations confirmed the presence of munitions contamination in soils and groundwater. A residential well survey was conducted to assure that all potential residential wells exposed to RDX were sampled. A portion of the alluvial aquifer extending northeast of Load Line 1 from the boundary of CHAAP into the northwest portion of Grand Island (Capital Heights area) has been contaminated with explosive compounds. Recent and historical sampling results indicate that RDX has migrated the greatest distance within the aquifer. The presence of RDX in the alluvial aquifer has been verified approximately 4 miles east of the CHAAP boundary. Sampling for HMX has indicated that small concentrations of this analyte also occur in the Capital Heights area.

As a result of this groundwater contamination, the U.S. Army paid for installation of a permanent water supply for residences in the area based on a drinking water criteria for RDX of 35 parts per billion (ppb). The presence of explosive compounds detected in off-post domestic water supply wells at levels above suggested water quality criteria levels required, an alternative water supply was provided to effected residences. The Army supplied bottled water to residents from January 1984 through June 1986, until a permanent alternative water supply system could be constructed. An extension of the city water system to the effected area began in August 1984. Due to a shallow water table, a system of dewatering wells was used to lower the water table sufficiently to allow installation of the water mains. The contaminated groundwater from the dewatering wells was discharged into Silver Creek, north of the residential area. Construction was completed in phases, with residential hookups completed in December 1986. Approximately 800 residences, including the affected area and adjacent neighborhoods that could be affected in the future, were provided an opportunity to hook up to the Northwest Grand Island Water Supply Extension.

Contaminated soils were removed and incinerated from September 1986 to August 1988. Contaminated groundwater has migrated beneath the Capital Heights area of Grand Island, Nebraska, contaminating approximately 246 drinking water sources in residences there. The installation was listed on the National Priorities List (NPL) on 22 July 87 due to the groundwater contamination emanating from the load-line cesspools and leach pits. CHAAP was placed on the NPL with a Hazard Ranking Score of 51.13.

A Federal Facility Agreement (FFA) was signed by the U.S. Environmental Protection Agency (EPA) Region VII, the Nebraska Department of Environmental Quality (NDEQ) and the Army, effective 4 September 90. The FFA included all response actions, including removal and remedial actions as the terms were defined by CERCLA, to be undertaken at CHAAP.

After the installation of the waterline extension, the U.S. Army and the U.S. Environmental Protection Agency's Office of Drinking Water published a health advisory which recommended that the drinking water criteria for general population be established at 10 ppb for ingestion only and 2 ppb for multiple pathways. Based upon this recommendation, the U.S. Army, in agreement with the Nebraska Department of Health, sampled additional residential wells near the area of concern using the 2 ppb health advisory as the decision point for alternative water implementation. These residents were provided bottled water as an interim action and all effected residents have been provided with the opportunity to access city water. A second waterline extension was constructed in December 1993. The maintenance of the waterline was transferred to the city. This extension covers the area east of the furthest detection of explosives.

A Remedial Investigation and Feasibility Study (RI/FS) task for all seven study areas (the loadline sites) was awarded in December 91. The scope of the contract carried the Operable Unit 1 (OU1) through the interim Record of Decision (ROD). The ROD for the explosive plume was signed by EPA Region VII on 29 September 94, and by the Army on 18 November 94. The Nebraska DEQ concurred on 2 December 94 to the Interim ROD. The design contract for the interim action ROD was awarded in March 94.

Contamination Assessment

The proposed design included extraction of 750 gpm in the source areas on-post, 150 gpm at the 20 ppb isopleth near Capital Heights, and 800 gpm at the distal end of the plume to prevent further migration of the RDX plume to the east. The Explanation of Significant Difference (ESD) implemented work on-post for the primary source areas and discharge to on-post canals. The explosives-contaminated water is pumped through a granular activated carbon system and discharged to on-post canals. Award of construction contract for the on-post phase was 13 June 97. Official OU1 groundwater treatment plant operation and maintenance began 18 December 98. The amended ROD for OU1 was signed in September 2001 to better define 'institutional controls' (The city has enacted an ordinance concerning wells within the plume.).

In addition, the waterline extension was completed in 1995 with service provided to 50 additional residents in the affected area. The removal of approximately 5000 tons of explosives-contaminated soils was completed in December 94. Confirmation of the removal was completed during the spring of 1995. A contract was awarded in July 94 to fill data gaps and complete the remaining remedial investigation and feasibility study (RI/FS). This contract completed the final RI for the facility for bringing the entire site to a final ROD and excessing CHAAP. In addition, a Preliminary Assessment Screening Report and Statement of Condition was completed in FY95 for a portion of the Phase I property planned for excessing. The final RI was completed in November 96. The final FS was approved February 98 and the final ROD (no further action) for OU2 was completed in September 98. The OU3 ROD was signed in December 99 and the OU4 ROD was signed in February 2000. Remedial action for the removal of explosives- and lead-contaminated soil was completed in 2000.

Previous investigations will serve to support excessing actions for the preparation of the Statement of Condition (SOC) of CHAAP and plans to parcel/excess properties. The Hall County Reuse Committee determines prioritization of properties for disposal. The reuse plan was completed in December 97.

Projected Construction Completion and Deletion from NPL: OU1 pump and treatment plant was completed in December 98. Partial removal from the NPL list will be initiated in FY2010.

These operable units are as follows:

- Operable Unit 1: LAP groundwater plume (primarily TNT and RDX).
- Operable Unit 2: No further action; Administration Base Housing Area, Abandoned Burning Ground, Magazine Areas, Drainage Ditches and Miscellaneous Storage Areas
- Operable Unit 3: Nitrate Area, Pistol Range, Shop Area, Sanitary Landfill (explosives, VOCs, and metals). no further action
- Operable Unit 4: LAP Facility soils, sediments and surface water. All other areas of concern are under institutional control, remedy in place therefore no further action.
- Operable Unit 5: Burning and Demo Grounds (explosives and metals)
- See map

Previous Studies

Title	Author	Date
Draft CERCLA Review	HydroGeologic	Sep-03
Final March 03 Annual Sampling Event for LTM	HydroGeologic	Sep-03
Closed, Transferring & Transferred/Site Inventory Report	Engineering Environmental Management Inc./USACE	Jul-03
Draft Annual Sampling Event for LTM	HydroGeologic	Jun-03
Letter CHAAP Review of Quality Assurance Project Plan For Remediation of Lead Impacted Soil at the Pistol Range Static Ejection Site/Backstop Berm	NDEQ	May-03
Demonstration of Operating Properly & Successfully for Explosive Soil Remediation Actions in the Load Lines in OU4 & No Further Action/No Response Action in OU2 & GWTP, LTM & Off site Natural Attenuation of Contaminated Explosive	USACE	Feb-03
Groundwater Sampling Event Technical Plan Letter Addendum	HydroGeologic & URS, Inc.	Feb-03
Final Workplan for OU1 ROD Amendment	USACE	Jan-03
Final OU1 Amendment		
Annual Sampling LTM March 01	URS Woodward	Jun-01
Revised PP for OU1 ROD Amendment	URS Woodward	Feb-01
OU3 final Soils Report	CET	Dec-00
Final Report First Annual GW Sampling for OPM for Burning Ground and Shop Area	Hydrogeologic	Dec-00
Final Report March 2000 Annual Sampling Event for Long-term Monitoring	URS Woodward	Sep-00
OU3 and OU5 LTM Report	Hydrogeologic Inc.	Sep-00
Draft Report March 2000 Annual Sampling Event For Long-term Monitoring	URS Woodward	Jul-00
Final Groundwater Flow & Contaminant Fate & Transport Modeling	URS Woodward	Mar-00
OU4 ROD	ICF Kaiser Inc	Feb-00
OU3 ROD	ICF Kaiser Inc	Dec-99
1999 Annual Sampling Event for LTM Program	URS Woodward	Jul-99
Groundwater Flow Modeling	URS Woodward	May-99
EBS	USACHPPM	Nov-98
June 1998 Annual Sampling Event for Long-term Monitoring Program	Woodward Clyde	Oct-98
OU2, ROD	ICF Kaiser Inc	Sep-98
1997 Annual Sampling LTM Program	URS Woodward	Mar-98
Proposed Plan- OU3 and OU4 Public Meeting	USACE	Feb-98
Underground / Above Ground Storage Tanks, UST / AST site Investigation, Final	AEC	Oct-97
Environmental Assessment / FONSI, OU1 Groundwater Treatment Plant	COE, Omaha District	Jul-97
1996 Annual Sampling LTM Program	URS Woodward	Jul-97
Feasibility Study - Operable Unit One (Unsaturated Zone) and Operable Unit Three, Final Document	AEC	May-97
Proposed Plan - OU2 Public Meeting includes Restoration Advisory Board (RAB) Briefing	AEC	Mar-97
Proposed Plan (Final) No Further Action OU2 (Administration Area, Magazines, Housing, Miscellaneous Storage, Abandoned Burning Grounds, Drainage Ditches)	AEC	Feb-97
Explanation of Significant Differences (ESD) & Related Public Meeting Documents for OU1 Record of Decision (ROD)	AEC & EPA	Feb-97
OU2 Remedial Investigation Addendum, Final Document "No Further Action"	AEC	Nov-96
Symptom & Disease Prevalence-Health Study- Final Report	ATSDR	Sep-96
Remedial Investigation Report CHAAP, U.S. AEC Final Chapters	ICF Kaiser Inc	Sep-96
Document: Explanation of Significant Differences (ESD) AEC Change in Effluent Water Discharge Location	AEC	May-96
Report, AEC/ICF Kaiser Remedial Investigation/Feasibility Study RI/FS of Tanks	ICF Kaiser Inc	May-96
Report, Groundwater Interim remedial Action Design-Basis Model	Dames & More Inc.	Sep-95
Concept Design Analysis, OU-1	RUST Corporation	Aug-95
Technical Plan, Part A & B RI/FS	ICF Kaiser Inc	Jun-95
Quality Assurance Project Plan	ICF Kaiser Inc	Jun-95
Preliminary Assessment Screening (PAS) of Agricultural Tracts 41, 42, 44, 53, 54, 55, 56 & 57	AEC	May-95
RD/RA Predesign Technical Summary OU1 Groundwater	RUST Corporation	Feb-95
Background Data review & Evaluation	ICF Kaiser Inc	Dec-94
Work Plan OU1 Groundwater	RUST Corporation	Nov-94

Previous Studies

Title	Author	Date
Record of Decision (ROD) Summary, Operable Unit One	AEC	Sep-94
Groundwater Modeling	Watkins-Johnson Inc.	Sep-94
Public Availability Session - Groundwater Cleanup	CAAP	May-94
Proposed Plan CAAP, Operable Unit One Explosives Groundwater Plume	AEC	May-94
Focused Feasibility Study for Groundwater Operable Unit One	AEC & Watkins-Johnson Inc.	Mar-94
Initial Screening of Technologies	AEC & Watkins-Johnson Inc.	Jul-93
Plant Site Characterization Report	AEC & Watkins-Johnson Inc.	Jun-93
Facts Sheet, Flooded Basements & RDX	AEC & Watkins-Johnson Inc.	May-93
Site Characterization report	AEC, Stollar	Dec-92
Assessment of Chemical ARARs & Pump Test	USATHAMA	Oct-92
Public Health Assessments for Cornhusker AAP	ATSDR	Aug-92
Engineering Evaluation/Cost Analysis	AEC	Jul-92
Remedial Investigation/Feasibility Study	AEC	Jun-92
Facts Sheet, CAAP Summary of IAG	AEC	Jan-92
EPA Region VII Facts Sheet	CAAP	Nov-91
Community Relations Plan	USATHAMA	Nov-91
Data Management Plan	USATHAMA	Nov-91
Sampling & Analysis Plan- Field Sampling Work Plan	USATHAMA	Nov-91
Facts Sheets, Vegetable Gardens, Grand Island, NE	USATHAMA & ENSR	Nov-91
Community Interviews	USATHAMA	Jan-91
Federal Facility Agreement	EPA, NDEQ, and DA	Apr-90
Fact Sheet, RDX Health Effects	USATHAMA	Mar-90
Groundwater Sampling Event Technical Plan Letter Addendum	Hydrogeologic/URS	Feb-03
Scope of Work for Contaminated Soil Removal, Cornhusker Army Ammunition Plant	Deerinwater Environmental Management Services	May-03
ESTCP Demonstration Project Summary – Oregon Health and Science	University of Oregon	Jul-04
Draft Project Work Plan, Contaminated Soil Removal, Cornhusker Army Ammunition Plant	Deerinwater Environmental Management Services	Oct-03
2003 Monitoring Well Maintenance, Cornhusker Army Ammunition Plant	Hydrogeologic, Inc.	Oct-03
Environmental Security Testing and Certification Program (ESTCP) Design and Installation Plan	Oregon Health & Science University of Oregon	Nov-03
Quality Assurance Project Summary for Remediation of Lead Impacted Soil at CHAAP Pistol Range Static Ejection Site/Backstop Berm	Jacobsen/Helgoth Consultants	Dec-04
Draft Report Contaminated Soil Removal CHAAP	Deerinwater Environmental Management Services	Dec-03
March 2004 Groundwater Sampling Event Draft Technical Plan Addendum, Cornhusker AAP	Hydrogeologic, Inc.	4 Feb 2004
January 2003 – December 2003 Groundwater Treatment System Sampling & Analysis CHAAP (Chemical Quality Control Summary Report)	Hydrogeologic, Inc.	4 Feb 2004
CAAP Feb 2004 Monitoring Well Installation Trip Report	Hydrogeologic, Inc.	Mar-04
Final First Five Year (CERCLA) Review	Hydrogeologic, Inc.	Mar-04
Final Contaminated Soil Removal OU3, Cornhusker AAP	Deerinwater Environmental Management Services	Mar-04
Draft LTM Optimization Study For CHAAP	Hydrogeologic, Inc.	May-04
Draft Groundwater Model Review, CHAAP	Hydrogeologic, Inc.	May-04

Previous Studies

Title	Author	Date
Draft March 2004 Annual Sampling Event For the LTM Program	Hydrogeologic, Inc.	Jul-04
REPORTS FROM MKM Engineers, Inc.		
Closure Report For Site Investigation and Screening of Unexploded Ordnance at OB/OD Area		May-99
Demolition of Load Line #5 at Cornhusker Army Ammunition Plant		Dec-00
Workplan Disassembly and Decontamination of Select Process Equipment at Load Lines 1, 2, 3 and 4		Jul-01
5X Certification of Load Lines 1 through 5 at Cornhusker Army Ammunition Plant		May-02
Scope of Work, Thermal Decomposition and 5X Certification of Load Line #3		Sep-03
Proposal for Thermal Decomposition, Demolition and 5X Certification of Load Line #4		Sep-03
Scope of Work for Thermal Decomposition, Demolition and 5X Certification of Select Buildings in Nitrate and Shop Areas		Sep-03
5X Certification of Load Line #5		Dec-03

ER, A ELIGIBLE ACTIVE AEDB-R SITES OU1

Operable Unit One (OU1) is comprised of the explosives-contaminated groundwater plume, which originates from the buildings on Load Lines 1-5. A ROD and a ROD Amendment have been completed for OU1 and a pump-and-treat system is currently on-line. The pump-and-treat system consists of seven extraction wells (four operational) with a total groundwater extraction rate of approximately 750 gallons per minute, sand filters and a granular activated carbon (GAC) adsorption system.

SITE DESCRIPTION (page 1 of 3)

The 5 Load Assemble and Pack (LAP) facilities at CHAAP constitute the major set of buildings and center for operations at the site during munitions production years. Munitions production within the load lines at CHAAP required use and disposal of large amounts of water. Major operations where explosives waste-water were produced included: screening, melting and mixing, rod and pellet manufacturing, remelt and refill, and washing and laundry.

Physical screening operations were conducted as the first process for incorporating explosives (i.e., 2,4,6-TNT and RDX) into munitions. Explosives were received in flake form and screened and sifted for material handling purposes. Waste-water was generated in the operation by the ventilation systems which collected explosive dust generated by the screening operation and washed it from the air with Schneible units (wet scrubbers). The water from the Schneible units was run through settling tanks and recycled; however, excess waste-water was produced. Waste-water was also generated from periodic wash-down of machinery and interior building surfaces. The waste-water was disposed via interior building drains into a sack sump (concrete pit) that was equipped with a filter bag. The bag, made of canvas-like material, was designed to filter out the solid explosive particles. The waste-water was then transferred via open concrete channels into a circular earthen impoundment. The impoundment wall is masonry-lined with the bottom open to the sand and gravel strata. An overflow channel was routed from the impoundment to a leaching pit that was designed to handle any water that did not infiltrate into the bottom of the impoundment. This overflow occurred due to the limited filtering capacity of the sack sump to trap explosive particulates. Particles were periodically scraped from the bottom of both the earthen impoundments and leaching pits and ignited at the Burning Grounds (CAAP-005, OU5) located in the northwest section of CHAAP.

During the Installation Restoration Incineration Program (IRIP) (1988), it was determined that 58 impoundments had received explosives contaminated waste-water. It was determined that soil would be removed from the impoundments if concentrations were greater than 5 parts per million (ppm) for 2,4,6-TNT, 10 ppm for RDX, 15 ppm for 1,3,5-TNB, 0.5 ppm for 2,4-DNT. Several guidelines, originally incorporated into the proposed excavation plan, related to the distance between the water table and the impoundments bottom and the location of adjacent building foundations. Soil would be removed from the bottoms of the impoundments until action levels were met (a depth of 6 ft) or the excavations had reached a depth 1 ft below the groundwater level, whichever occurred first. Additional guidelines specified that soil would be removed laterally until the action levels were met, or until building foundations were threatened by operations. Due to the high water table conditions at the time of the scheduled excavations, the criteria regarding the depth of the soil removal were changed to require meeting action levels or until soil had been removed to a depth of 5 ft below the water-table surface, whichever occurred first. Soil was removed in 29 of the 58 impoundments in spring 1988 to the point where action levels were met. In the other 29 impoundments, soil was removed to 5 ft below the water table. In these impoundments, concentrations of one or more of the explosive compounds were still above action levels. Action levels were achieved in all but two instances in the lateral direction.

In the fall of 1990, surface soil samples were collected by ICF Kaiser Engineers. Analytical results showed high concentrations of 2,4,6-TNT (3,200 ug/g and 6,000 ug/g) and elevated concentrations of lead (175 ug/g) and chromium (58.5 ug/g) in samples collected near Building 1L-10 in Load Line 1. Elevated concentrations of chromium (25.1 ug/g) and lead (135 ug/g) occurred in a sample taken southwest of the Building 1L-18 along the railroad tracks at the north end of this load line (Figure 2.2-8). RDX, NB, HMX and 1,3,5-TNB were detected at concentrations below 100 micrograms per gram (ug/g) but above Certified Reporting Limits (CRLs) in several other samples. Phase I RI: Twenty sites with surface soil containing 246TNT at concentrations greater than 5 ug/g were identified in the LAP area based on field screening analytical results. The lateral extent of these "hot spots" range from approximately 40 to 380 ft. Three of the remaining cesspools have 246TNT level contamination above 5 ug/g. Results also indicate that four non-explosive waste-water cesspools contained Cr and Pb

SITE DESCRIPTION (page 2 of 3)

above levels of concern. Isolated areas of petroleum hydrocarbons were detected ranging from 40 to 7,000 ug/g. Soil removal and off-site treatment of 5,000 tons of soil from 25 removal areas was carried out by the Army in 1994.

Phase II RI: Confirmation of the FY94 removal action was completed in June FY96. A more detailed background data collection was conducted to determine the elevation of metals in the LAP soils. In addition, work was carried out to determine the potential of contamination beneath the LAP structures. Samples from the Nov 96 RI have shown minimal amount of contamination below the LAP structures and indicated complete removal of explosives from the soil in all but IRA site 4 at Load Line 1 (1400 ug/g).

The ROD Amendment was signed in September 2001. Funds other than ER,A have been designated for explosive safety action to flash/restore the load lines for public development. RA(O) phase began in 1998

PROPOSED PLAN

Continue to perform RA(O) and LTM of explosive contaminant plume.

STATUS

RRSE RATING: High

CONTAMINANTS OF CONCERN:

Explosives

MEDIA OF CONCERN:

Groundwater

COMPLETED IRP PHASE:

PA/SI, RI/FS, RD, RA(C), IRA(2)

CURRENT IRP PHASE:

RA(O)

FUTURE IRP PHASE:

RA(O)

ER,A ELIGIBLE ACTIVE AEDB-R SITES OU2

Operable Unit Two (OU2) is comprised of the Administration and Base Housing Areas, Abandoned Burning Area, Drainage Ditches, Magazine Areas, Miscellaneous Storage Areas, and Sewage Treatment Plants. A ROD for institutional controls has been completed for OU2 (1998) because there is no indication of adverse effects from contact with environmental media at this operable unit.

ER, A ELIGIBLE ACTIVE AEDB-R SITES OU3

Operable Unit Three (OU3) is comprised of Non-Active Demolition Debris Landfill (CAAP-003), and Motor Pool/Shop Area (CAAP-008). The Nitrate Area that exists in this OU is part of the Motor Pool in AEDB-R. This OU includes the Pistol Range. The OU3 ROD and remedial action was completed in August 2000 except for the Pistol Range backstop (active site not eligible for IRP funds), remediation completed in fall of 2003 by the city of Grand Island, NE per license agreement.

CAAP-008

MOTOR POOL (OU3)

SITE DESCRIPTION

This site is made up of the Motor Pool Area (NFA) and the Shop which are in completely separate locations.

SHOP AREA: The Shop Area is located in the southeast portion of the facility, south of Load Line 1, covering an area of about 1,500 ft x 2,000 ft and includes 28 buildings and sheds. The Shop Area consists of the vehicle, equipment and other operations maintenance facilities; rail loading and unloading area; and areas used for open storage. Operations in the Shop Area center around maintenance support for the entire CHAAP facility and involve the use and storage of various solvents. A TCA plume is on the west side of the area.

The FS and RI were completed in 1984.

Note: For “Nitrate Area,” see RC Section

PROPOSED PLAN

The OU3 ROD for NFA proposed monitored natural attenuation (MNA). The state requires monitoring to continue until action levels are achieved.

STATUS

RRSE RATING: Low

CONTAMINANTS OF CONCERN:
TCA

MEDIA OF CONCERN:
Groundwater

COMPLETED IRP PHASE:
PA/SI, RI/FS, IRA(C)

CURRENT IRP PHASE:
RIP (2001) with LTM

FUTURE IRP PHASE:
RIP (2001) with LTM

UNDERGROUND STORAGE TANKS (INSTALL-WIDE)

SITE DESCRIPTION

Phase I RI: The results show that petroleum hydrocarbons and low level PCB contamination exist in the area in and around the shop area. Further delineation was completed during the summer FY99. The data analysis was included in the CHAAP OU3 RI. A leaking above ground storage tank (misidentified as a UST in AEDB-R site title) was removed by HQ, IOC in September 98. Dirt berms still exist with POL contaminated soil. Removal of contaminated soils was completed.

This site is on the east side of the area, in the same vicinity as CAAP-008, but contamination is from a different source.

PROPOSED PLAN

LTM will continue for one year.

STATUS

RRSE RATING: Medium

CONTAMINANTS OF CONCERN:

POL

MEDIA OF CONCERN:

Soil, Groundwater

COMPLETED IRP PHASE:

PA/SI, RD, IRA, RA

CURRENT IRP PHASE:

RIP (2004) with LTM

FUTURE IRP PHASE:

RC

ER,A ELIGIBLE ACTIVE AEDB-R SITES OU4

Operable Unit Four (OU4) is comprised of Pink Water Disposal Pits (CAAP-001,CAAP-002), Clay Pit Disposal Area and the unsaturated zone (0 - 6 feet below ground surface) of Load Lines 1 through 5. Explosive Safety Actions (non-ER,A) conducted for transfer of Load Lines 1 through 5 to the general public. Cleanup of Load Lines 1, 2 and 5 is complete pending transfer. Cleanup for Load Line 3 is scheduled for completion in CY05.

CAAP-01/-02

LOAD LINES 1 - 5 (OU4)

EXPLOSIVE SAFETY ACTIONS (NON ER,A) CONDUCTED FOR TRANSFER OF LOAD LINES 1 - 5 TO THE GENERAL PUBLIC.

DOD Policy and Guidance: DOD has documents outlining guidance and reference publications on explosive materials. Work is performed in accordance with “The Classification and Remediation of Explosive Contamination IOCP 385-1” issued by the U.S. Army Operations Support Command in Rock Island, IL.

The Army has determined that controlled burning is the safest method for explosive decontamination.

Rational for controlled burning as the safest option: To decontaminate explosive contamination to include chemical attenuation and physical removal is technically impractical.

- a. Not subject technicians to direct contact with an unknown explosive environment that could result in a fatality.
- b. Conventional demolition and decontamination methods cause heat, shock, and friction, all of which trigger explosions.
- c. Complies with the Army’s objective of obtaining a 5X certification for public safety and transfer for property to private/public ownership.

5X CERTIFICATION OF LOAD LINES

1. ***Removal of hazardous items of environmental concern (i.e., mercury switches and PCB ballast), glass panes and fixtures as required to enhance safety.***
2. The location of all floor/sewer drains will be verified and noted to facilitate their location after thermal treatment of the buildings.
3. Explosive process pipes in EBs or PEBs will be flashed using detonation cord and shape charges prior to thermal treatment.
4. Process equipment and ventilation ducts with potential explosive contamination will be inspected, sampled, and if necessary, flashed with detonation cord or pressure washed prior to thermal treatment of the building.
5. Every building within each load line will be loaded with dunnage to ensure a complete burn of explosive contamination.
6. Fire breaks will be cut around each load line prior to initiating the burn to mitigate the potential for fire migration.
7. Heat sensing devices will be strategically placed in and around the load line buildings being burned to document complete decomposition of explosives.
8. After load line buildings have been burned, the walls and debris will be removed using armored excavators, front-end loaders and dump trucks, hardened with lexan blast shielding added to window surfaces.

CAAP-01/-02

LOAD LINES 1 - 5 (OU4)

9. After surface debris has been removed, floor drains will be relocated and flashed using detonation cord to enhance safety during concrete floor removal operations.
10. Hardened Earth Moving Machinery will be used to chip/demolish all concrete floors within EBs and PEBs, and the soil underneath will be checked for the presence of explosive soils (>10% by weight).
11. Any noticeable crack in the concrete floor (1/8" wide or greater) will require that the crack be flooded with water prior to the concrete flooring being demolished within three feet on either side of the cracked area.
12. Once floor removal has been conducted any visible explosive contamination under the floor will be remediated until an explosive concentration in the soil of less than 10% by weight is achieved.
13. Sampling of soil under floor slabs in NEBs, EBs and PEBs will be conducted to ensure and document that the soil is not explosive, i.e. <10%.

ER,A ELIGIBLE ACTIVE AEDB-R SITES OU5

Operable Unit Five (OU5) consists of one site, CAAP-05 Demo and Burning Ground. The Burning Ground was designated as OU3 in the feasibility study. Due to safety issues posed by unexploded ordnance, the site was removed from OU3 and redesignated as OU5.

CAAP-005

DEMO AND BURNING GROUND (OU5)

SITE DESCRIPTION

The Burning Ground is located in the northwest corner of the installation and covers an area of approximately 32 acres. The area is presently not in use and is covered by natural grassland vegetation. A portion of the site contains unexploded ordnance from past fail-detonation attempts. This tee-shaped area is fenced and labeled "Restricted Area." Regions adjacent to the site are leased and cultivated for crops. The Burning Ground has been used since the early history of CHAAP for the burning, demolition and disposal of a variety of materials including 2,4,6-TNT, RDX, tritonal, aluminum powder, ammonium nitrate, and lead azide. The occurrence of a series of trenches is indicated on past aerial photos and has been confirmed by preliminary results of recent geophysical investigations by ICF Kaiser. In December 1967 several attempts were made to detonate canisters and drums filled with mines and mixed explosive waste. Several of these detonations resulted in scattering of explosive debris throughout the area. In April 1968, the demolition area was soaked with oil and ignited, and subsequently compacted using a tractor and roller. An area south of the restricted area was also historically used for burning explosive waste material.

STATUS

RRSE RATING: Medium

CONTAMINANTS OF CONCERN:

Explosives, VOCs, Metals

MEDIA OF CONCERN:

Groundwater, Soil

COMPLETED IRP PHASE:

PA/SI, IRA (3)

CURRENT IRP PHASE:

RI/FS, (OPM)

FUTURE IRP PHASE:

RI/FS

During the excavation and incineration program (spring 88-90), construction materials from the contaminated surface impoundments and materials used in the incineration process were thermally treated at the Burning Ground. Approximately 5,549 cubic yards of explosives-contaminated soil were excavated from the earthen surfaces of the burning pads in association with closure of the site following the thermal treatment operations.

Phase I RI (1990): Burning Ground area contains five sites with 2,4,6-TNT levels exceeding the 5 ug/g level. Groundwater results indicate the presence of two anomalies associated with freon and sulfates. The freon levels range up to 3000 ug/kg. Currently no criteria for groundwater freon levels exist. Since the pH level of the water is neutral the sulfates are attributed to seams of gypsum which is commonly occurring through that region of Nebraska.

Phase II RI (1994-1995): Explosives were not detected above 2 ug/l. Freon concentrations in groundwater increased across the site and ranged from 36 ug/l 3,000 ug/l. The risk was associated with these compounds. These concentrations fell under EPA Region 9 Tap Water PRGS, but above California MCLs. Within the restricted zone, explosive concentrations in soil were elevated. TNT ranged from 2.46 5,000 ug/g, TNB .5-15 ug/g and RDX below the industrial RBCS. The ABA is also part of this area and no contamination was found on this site. The site has been proposed for No Further Action.

Phase III RI (1998): HQ, OSC initiated visual UXO surficial inspections. Surface removal of vegetative growth was accomplished by controlled burning which resulted in a secondary detonation. HQ, IOC has performed preliminary site investigation by Ferex Imaging and access clearance to the trench containing approximately 100,000 pound of gravel mines in the original containers.

(May 2004): ER,A responsibilities transferred to MMRP for RI, MEC/OE removal, IRA, FS, PP, and ROD.

PROPOSED PLAN

LTM is being performed to monitor release of potential contaminants of concern during UXO removal activities. ER,A/MMRP will perform site characterization MEC/OE removal, IRA, FS, PP and ROD. (Another 6 new MEC/OE sites in Tract 19, 20 and 21 have been identified and will be administered under the MMRP program.)

**ER,A AEDB-R SITES
RESPONSE COMPLETE**

NON-ACTIVE DEMOLITION DEBRIS LANDFILL (OU3)

SITE DESCRIPTION

The Sanitary Landfill is located in the northwestern part of the installation, immediately south and east of the Burning Ground (CAAP-005, OU5). The Sanitary Landfill encompasses approximately 55 acres and opened in 1969. The exact date of cessation of landfill activities is unclear; however, the site has been closed since 1988. During its operation it was used for the disposal of rubbish and trash, scrap wood, and inert construction materials. Approximately 24,090 cubic yards of these materials were buried annually in 6 to 10 ft deep trenches. A recent survey of tenants at CHAAP by ICF Kaiser indicates that small quantities of liquid waste (approximately 5 gal per month), possible inclusion of plasticizer, acetone, dimethylaniline, resin emulsifier, isopropyl and polyvinyl alcohol, aluminum trihydrate, and ethanolamine, were disposed at the Sanitary Landfill by one tenant during the period from 1978 to 1981. Mason and Hanger (former GOCO contractor) personnel report that contaminated metal may have been landfilled at the site. Rocket fuses were also detonated in the area of the landfill.

Inorganic constituents detected in the wells included barium (5.12 to 109 ug/l) and iron (1,010 to 3,130 ug/l). Wells G0039 and G0041 contained the organic analytes 1,1,2-trichloro-1,2,2-trifluoroethane (Freon) (2,000 ug/l) and 2,4-D (0.076 ug/l) respectively. Wells G0037 and G0040 contained an unknown semi-volatile compound, and Well G0038 contained 1,2-DCE (I 0.68 ug/l), acetone (48.51 ug/l), and five unknown organic compounds at concentrations ranging from 5 to 30 ug/l.

Phase I RI: Five exploratory pits were trenched in July 1992 based on the completed geophysics results. Analytical results indicate a wide variety low level organic and one detection of 246TNT at 12.9 ug/g.

Phase II RI: No significant levels of contamination were detected in August 1994, during this round of sampling. Elevated levels of metals were detected in groundwater (Sb ranging from 64.5 ug/l-72.4 ug/l in G0038 and G0041 and Mn ranging from 1.5-19.2 ug/l in 0037, 40, 41 & 62). In addition, low levels of organics were detected, below RBCs in the burning cages. Low levels (5-380 ug/l) of Freon contamination were also found emitting from the Pistol Range and Burning Ground. The regulatory standards available for Freon 113 are the California MCL 1,200 ug/l and the Tap Water MCL 59,000 ug/l.

STATUS

RRSE RATING: High
CONTAMINANTS OF CONCERN:

Explosives, SVOCs

MEDIA OF CONCERN:

Soil, Groundwater

COMPLETED IRP PHASE:

PA/SI, RI/FS, RD, RA(C)

CURRENT IRP PHASE:

RC - 2001

CAAP-004

CLAY PIT DISPOSAL AREA (OU3-4)

SITE DESCRIPTION (page 1 of 2)

PISTOL RANGE:

The Pistol Range is located near the western boundary of CHAAP northwest of Load Line 4 covering an area of about 30 acres. The site now contains a large berm used as a backstop for small arms fire. The pistol range is licensed to the city of Grand Island for local law enforcement utilization.

The Pistol Range was the site of a destruction area for all the scrap and reject explosives generated by the Line V Aerial Mine Program. Based on review of correspondence in Mason & Hanger files, the site, referred to here as the "Demolition Ground," appears to have been active in the capacity from April 1968 until spring 1969. The Standard Operating Procedures (SOPs) for the "Pistol Range Demolition Area" provide operational guidelines for the following operations:

- Static ejection of mines from canisters
- Burning RDX and desensitized lead azide
- Destruction of canisters by detonation
- Destruction of mines by detonation
- Disposal of RDX contaminated material
- Destruction of XM45E1 mines by burning
- Destruction of lead azide (bulk) by detonation
- Disposal of Freon contaminated with explosives

According to a Mason & Hanger engineering drawings, burning and demolition operations took place north of the berm in a series of seven burning pits or culverts which were 4 ft deep, ranging from 2 to 4 ft in width and 8 to 40 ft in length. A Mason & Hanger work order dated 27 May 1969 calls for building fence around "five abandoned and filled trenches," indicating that demolition activities had taken place in at least that many burning pits or culverts. The SOPs describe decanting operations in association with some of the demolition and destruction activities. The above referenced engineering drawings depicts a decanting station and leaching pit south of the berm on the east side of the Pistol Range access road.

A 1969 aerial photograph confirms the existence of a cleared area with several visible pits located north of the berm. It also shows another cleared area corresponding to the general location on the drawing for the decanting station and leaching pit. These areas were taken out of the leasable portion of the facility. Prior to FY95 this area was under cultivation. The status of this area will be reevaluated with the analytical results of the OU3 RI.

The SOPs indicate that decanting and demolition involved Freon, lead azide, RDX, fuel oil, "approved solvents," and ceric ammonium nitrate. A review of documents and records by ICF Kaiser during the Excessing Assessment provided no information on the quantities of materials disposed of during decanting and demolition operations.

Phase I RI: (Aug 1995) Heavy metals, petroleum hydrocarbons and explosives were detected in samples collected from the exploratory pits dug to the north of the Pistol Range berm. The placement of the pits was based on aerial photographs, geophysical data, and some historical facility drawings. Lead contamination was detected up to 3,400 ug/g. Additional groundwater wells, test pits and soil samples have been completed to determine the water quality down-gradient of the former burning pit area and the extent of soil contamination with the burn pits. Results of this effort were included in the OU3 RI. Phase II RI: Freon was detected in the sampling of groundwater through mini-wells located in decanting area. Seven areas were identified by the electromagonmeter survey. The seven anomalies were located in the same area as seven of the ten test trenches in the 1993 sampling effort. The trenches were then sampled for groundwater and subsurface contamination. Test trench PRST08 contained burnt wood, fiberglass, spray paint cans and blisterpacks. Soil

CAAP-004

CLAY PIT DISPOSAL AREA (OU3-4)

SITE DESCRIPTION (page 2 of 2)

Samples showed concentrations of RDX (1500 ug/g), HMX (200ug/g) and TPH (448 ug/g) and low levels PAHs. Pb, Be, FE, as exceeded industrial RBCs. PRST02, 03 09 & 10 detected elevated metals, but no VOC's or explosives above regulatory limits.

The backstop was sampled for metals contamination. There were elevated Pb levels in the soil (1400-150,000 ug/g); however, no Pb was detected in groundwater. The determination was made that due to current site activity, future remediation does not qualify for ER,A funds.

Remediation of site is the responsibility to the licensee.

STATUS

RRSE RATING: High
CONTAMINANTS OF CONCERN:

Explosives, Lead

MEDIA OF CONCERN:

Soil

COMPLETED IRP PHASE:

PA/SI, RI/FS, RD, RA(C), IRA

CURRENT IRP PHASE:

RC - 2001

CAAP-004, OU4

CLAY PIT DISPOSAL AREA

SITE DESCRIPTION

This AEDB-R site is made up of the Clay Pit and the Pistol Range (in OU3).

CLAY PIT: The gravel and clay pit area is located in the western part of CHAAP east of the Southern half of Load Line 4. The area measures roughly 600 ft by 1,800 ft and is covered by natural grassland vegetation. Ninth Avenue forms the east boundary of the area. Areas to the north and east of the gravel and clay pit area are leased and cultivated for crops.

Landfill activities in the gravel and clay pit area were reported in the Installation Assessment and by EPIC. There is no record regarding the types and quantities of wastes involved in these activities. The Installation Assessment indicated that the clay pit had been used for the disposal of

construction material along with crankcase oil, battery cables and trash. An excavated area with debris and trenches, along with depressions containing standing liquid were noted in aerial photos.

Phase I RI: July 1992 compounds detected include 135TNB, 2A46DT, 246TNT, HMX, RDX, petroleum Hydrocarbons. Most of the contamination is bounded in the upper portion of the soils, i.e. 246TNT at the surface has a concentration of 6,900 ug/g and a concentration of 4.7 ug/g at 10.5 feet below ground surface. Further sampling and analysis was conducted in conjunction with the OU2 RI. The extent of the petroleum hydrocarbon contamination will be presented in the OU2 RI.

Phase II RI: August 1994 compounds detected were TPH up to 9,420 ug/g and low levels of PAHs and VOCs.

STATUS

RRSE RATING: High
CONTAMINANTS OF CONCERN:

Explosives, Lead

MEDIA OF CONCERN:

Soil, Groundwater

COMPLETED IRP PHASE:

PA/SI, RI/FS, RD, RA(C), IRA(C)

CURRENT IRP PHASE:

RC

SITE DESCRIPTION

The Load Line Waste Water Treatment Plant located north of Load Line 4 served Load Lines 4 and 5 during periods of production. Two interconnected, bentonite-lined sewage stabilization lagoons were completed in 1974, northeast of Load Line 2. However, they were never placed into service.

Potential exists for past introduction of explosives and other contaminants into the sewer system that served Load Lines 4 and 5, but not in the lined lagoons. Contaminants that did not biodegrade or volatilize in the sewage treatment plant may have carried over in the effluent into unlined drainage ditches.

STATUS

RRSE RATING: Low
CONTAMINANTS OF CONCERN: Metals, Explosives
MEDIA OF CONCERN: Soil, Groundwater
COMPLETED IRP PHASE: PA/SI, RI/FS
CURRENT IRP PHASE: RC - 1998

This WWTP, located north of Load Line 4, consisted of an Imhoff tank, sludge pit, trickling filter and chlorinator tank. According to a former maintenance foreman at CHAAP, the chlorinator tank was never used. Solids from the Imhoff tank drained into an open sludge pit while the liquids were routed to the trickling filter. The trickling filter consisted of a rock-filled concrete tank with a spreader bar. Effluent from the trickling filter drained north-eastward into an intermittent drainage and then north toward the Sanitary Landfill.

Sampling of the soil in August 1992 in this area was included in the sampling efforts under the OU2 RI. Groundwater monitoring Well G0012 is located less than 100 feet southeast of that point where effluent from the trickling filter flows into the intermittent ditch and is screened in the upper middle part of the alluvial aquifer from 13 to 28 ft bgs. Analyses for explosives, lead, aluminum and nitrates were performed on samples from this well in 1982. Aluminum was the only analyte detected in the well and its concentration was 122 ug/l. Volatile organic compounds were analyzed in 1984 and trichloroethylene was detected at a concentration of 0.69 ug/l.

Phase I RI: The results indicate only the presence of metals in the background concentration ranges. Further investigations at this site are not warranted.

CAAP-007

CISD SANITARY WWTF (OU2)

SITE DESCRIPTION

The Sanitary WWTF, located in the southeast part of the installation, served the administration area, staff housing area and Fire and Guard Headquarters from 1942 to 1974. This WWTF consisted of an Imhoff tank, two sludge pits, a chlorinator building and an evaporation pond. Solids from the Imhoff tank drained into two sludge pits to the south. Sludge was periodically removed and spread over the adjacent fields. Liquid from the Imhoff tank was chlorinated in the chlorinator building north of the Imhoff tank and released into a ditch that meandered north and east into an evaporation pond.

This system was replaced in 1974 by a circular bentonite-lined stabilization lagoon located adjacent to the former leaching lagoon. Very little use of the new lagoon has occurred since its installation.

No manufacturing operations have been reported in this area. Sampling of the soil or groundwater were included in the OU2 RI in 1993.

STATUS

RRSE RATING: Low

CONTAMINANTS OF CONCERN: Metals, Explosives, VOCs

MEDIA OF CONCERN:

Soil, Groundwater

COMPLETED IRP PHASE:

PA/SI, RI/FS

CURRENT IRP PHASE:

RC - 1998

SITE DESCRIPTION

NITRATE AREA:

The Nitrate Area is located south of the Shop Area on the east side of CHAAP. It consists of a main building (N-17) with six satellite buildings, a rail loading yard, a chemical analysis laboratory, several other small buildings and several open storage areas.

The nitrate area was used during World War II for the production of ammonium nitrate, and from 1945 through 1948 for the production of fertilizer. It has been used for internal and external storage and for rail loading of fertilizers and unloading of raw materials for ammonium nitrate production. In 1968 Building N-2 was modified and converted to provide a Mine Test Facility in support of operations at Load Line 5. Testing operations began on 27 May 68. Building N-17 and the rail loading yard have been leased to Cornhusker Railcar Service (CRS) for railroad car repair since 1979.

During periods of production at CHAAP prior to 1973, the chemical analysis lab was used to perform quality control operations, water analysis, and other analytical work as required for the installation. Three sheds on the south side of the laboratory were used to store acids, ether, and alcohol.

Phase I RI: Various semi-volatile compounds were detected in the Nitrate Area in July 1994. Further evaluation of the risks will be conducted to characterize the risk posed by these compounds. Petroleum hydrocarbons were also detected in the surface soils. The explosive compounds 24DNT and 2A46DT were detected in the first round of groundwater sampling at this site but were not detected in the second round.

Phase II RI: (April 1996) Nitrates, PAHs and TPHC were the only contaminants detected in soil and groundwater sampling under this effort. Well NIGWO1 had detection's of ammonia (3800 ug/L), TKN (3,240 ug/L) and nitrate/nitrites (56,000 ug/L). Soils samples resulted in TPH up to 9420 ug/g and PAHs detected near past drum storage areas. Lead contamination in soils exceded residential scenarios but was within the industrial allowable standards. The lead was be remediated to residential standards to end NDEQ's informal dispute.

STATUS

RRSE RATING: Low

CONTAMINANTS OF CONCERN: Metals

MEDIA OF CONCERN: Soil, Groundwater

COMPLETED IRP PHASE: PA/SI, RI/FS, IRA

CURRENT IRP PHASE: RC

CAAP-001(AA,AB,AD,AE,AG-AV,A,B,C,F-Z),CAAP-002(B-G,I,J) PINK WATER DISPOSAL PITS -- SOILS

SITE DESCRIPTION

The Load Line Waste Water Treatment Plant located north of Load Line 4 served Load Lines 4 and 5 during periods of production. Two interconnected, bentonite-lined sewage stabilization lagoons were completed in 1974, northeast of Load Line 2. However, they were never placed into service.

Potential exists for past introduction of explosives and other contaminants into the sewer system that served Load Lines 4 and 5, but not in the lined lagoons. Contaminants that did not biodegrade or volatilize in the sewage treatment plant may have carried over in the effluent into unlined drainage ditches.

This WWTP, located north of Load Line 4, consisted of an Imhoff tank, sludge pit, trickling filter and chlorinator tank. According to a former maintenance foreman at CHAAP, the chlorinator tank was never used. Solids from the Imhoff tank drained into an open sludge pit while the liquids were routed to the trickling filter. The trickling filter consisted of a rock-filled concrete tank with a spreader bar. Effluent from the trickling filter drained northeastward into an intermittent drainage and then north toward the Sanitary Landfill.

Sampling of the soil in August 1992 in this area was included in the sampling efforts under the OU2 RI. Ground-water monitoring Well G0012 is located less than 100 feet southeast of that point where effluent from the trickling filter flows into the intermittent ditch and is screened in the upper middle part of the alluvial aquifer from 13 to 28 ft bgs. Analyses for explosives, lead, aluminum and nitrates were performed on samples from this well in 1982. Aluminum was the only analyte detected in the well and its concentration was 122 ug/l. Volatile organic compounds were analyzed in 1984 and trichloroethylene was detected at a concentration of 0.69 ug/l.

Phase I RI: The results indicate only the presence of metals in the background concentration ranges. Further investigations at this site are not warranted.

STATUS

RRSE RATING: High
CONTAMINANTS OF CONCERN: Metals, Explosives, Organics

MEDIA OF CONCERN:
Soils

COMPLETED IRP PHASE:
PA/SI, Phase I RI, RA Interim
ROD, RD, Phase II RI, FS

CURRENT IRP PHASE:
RC - 1995-1998

Schedule

PAST MILESTONES

1980

PA/SI Initiation

1982

PA/SI Completion

1984-86

IRA Load Line soils

1986-94

Interim RA extended water line

1992

Site Characterization Document

1994

Interim ROD OU1 Groundwater
IRA Hotspot soils (94-95)

1996

RI OU1, 2 & 3
RD groundwater treatment plant

1997

PRI Addendum OU2
PP OU2

1998

ROD OU2
Interim RA groundwater treatment
OU1

1999

UXO Safety action for OU5 by OSC
ROD OU3, Signed in December

2000

ROD OU4
RA Soils completed (OU3)

2001

Amend OU1 ROD

2002

CAAP transfer from OSC to USACE
5 year CERCLA review started

2003

RA soils completed OU3 AST
UXO Safety action completed for Load Line
5 and Load Line 1

2004

UXO safety action completed Load Line 2
& 3
5 year CERCLA review released to the
Public.
Remove CAAP-05 and transfer to MMRP
program.

PROJECTED MILESTONES

2005

UXO safety action completed Load Line 3

2006

UXO safety action completed Load Line 4

2010

Partial De-listing from NPL

2015

Projected completion date of all RA

2027

RA(O)
Projected completion date of IRP

NO FURTHER ACTION SITES

The following sites currently require no further action under the ER,A program:

CAAP-001A	PINK WATER DISP DP-01 (LP)
CAAP-001AA	PINK WATER DISP DP-27 (CP)
CAAP-001AB	PINK WATER DISP DP-28 (CP)
CAAP-001AC	LOAD LINE 3 PINK WATER DISP DP-29 (CP) (OU4)
CAAP-001AD	PINK WATER DISP DP-30 (CP)
CAAP-001AE	PINK WATER DISP DP-31 (CP)
CAAP-001AF	LOAD LINE 2 PINK WATER DISP DP-32 (CP) (OU4)
CAAP-001AG	PINK WATER DISP DP-33 (CP)
CAAP-001AH	PINK WATER DISP DP-34 (CP)
CAAP-001AI	PINK WATER DISP DP-35 (CP)
CAAP-001AJ	PINK WATER DISP DP-36 (CP)
CAAP-001AK	PINK WATER DISP DP-37 (CP)
CAAP-001AL	PINK WATER DISP DP-38 (CP)
CAAP-001AM	PINK WATER DISP DP-39 (CP)
CAAP-001AN	PINK WATER DISP DP-40 (CP)
CAAP-001AO	PINK WATER DISP DP-41 (CP)
CAAP-001AP	PINK WATER DISP DP-42 (CP)
CAAP-001AQ	PINK WATER DISP DP-43 (CP)
CAAP-001AR	PINK WATER DISP DP-44 (CP)
CAAP-001AS	PINK WATER DISP DP-45 (CP)
CAAP-001AT	PINK WATER DISP DP-46 (CP)
CAAP-001AU	PINK WATER DISP DP-47 (CP)
CAAP-001AV	PINK WATER DISP DP-48 (CP)
CAAP-001B	PINK WATER DISP DP-02 (LP)
CAAP-001C	PINK WATER DISP DP-03 (CP)
CAAP-001D	LOAD LINE 4 PINK WATER DISP DP-04 (LP) (OU4)
CAAP-001E	LOAD LINE 5 PINK WATER DISP DP-05 (LP) (OU4)
CAAP-001F	PINK WATER DISP DP-06 (CP)
CAAP-001G	PINK WATER DISP DP-07 (CP)
CAAP-001H	PINK WATER DISP DP-08 (LP)
CAAP-001I	PINK WATER DISP DP-09 (LP)
CAAP-001J	PINK WATER DISP DP-10 (CP)
CAAP-001K	PINK WATER DISP DP-11 (LP)
CAAP-001L	PINK WATER DISP DP-12 (LP)
CAAP-001M	PINK WATER DISP DP-13 (CP)
CAAP-001N	PINK WATER DISP DP-14 (LP)
CAAP-001O	PINK WATER DISP DP-15 (LP)
CAAP-001P	PINK WATER DISP DP-16 (CP)
CAAP-001Q	PINK WATER DISP DP-17 (CP)
CAAP-001R	PINK WATER DISP DP-18 (CP)
CAAP-001S	PINK WATER DISP DP-19 (CP)
CAAP-001T	PINK WATER DISP DP-20 (CP)
CAAP-001U	PINK WATER DISP DP-21 (CP)
CAAP-001V	PINK WATER DISP DP-22 (CP)
CAAP-001W	PINK WATER DISP DP-23 (CP)
CAAP-001X	PINK WATER DISP DP-24 (CP)
CAAP-001Y	PINK WATER DISP DP-25 (CP)
CAAP-001Z	PINK WATER DISP DP-26 (CP)
CAAP-002A	LOAD LINE 1 PINK WATER DISP DP-49 (CP) (OU4)

NO FURTHER ACTION SITES

CAAP-002B	PINK WATER DISP DP-50 (CP)
CAAP-002C	PINK WATER DISP DP-51 (CP)
CAAP-002D	PINK WATER DISP DP-52 (CP)
CAAP-002E	PINK WATER DISP DP-53 (CP)
CAAP-002F	PINK WATER DISP DP-54 (CP)
CAAP-002G	PINK WATER DISP DP-55 (CP)
CAAP-002H	LAUNDRY FAC PINK WATER DISP DP-56 (OU4)
CAAP-002I	PINK WATER DISP DP-57 (CP)
CAAP-002J	PINK WATER DISP DP-58 (CP)
CAAP-003	NON ACTIVE DEMOLITION DEBRIS LF (OU3)
CAAP-004	CLAY PIT DISPOSAL AREA (OU3-4)
CAAP-006	SWWTP (OU2)
CAAP-007	CISD SANITARY WWTF (OU2)

Cornhusker AAP IRP Schedule

(Based on current funding constraints)

Current Phase

Future Phase

AEDB-R #	PHASE	FY05	FY06	FY07	FY08	FY09	FY10	FY11+
CAAP-005	RI							
CAAP-008	LTM							
CAAP-009	LTM							
CAAP-010	RA(O)							

REM/IRA/RA Assessment

Past REM/IRA/RA

Prior to the effective date of the Federal Facilities Agreement (FFA):

Incineration of soils containing explosives in 58 cesspools and leach pits was completed in August 88. Contaminated soils treated as part of the removal operation included 39,926 tons of contaminated soils.

Waterline extension was completed in December 86. Approximately 800 residences, including the affected area and adjacent neighborhoods that could be affected in the future, were provided an opportunity to hook up to the Northwest Grand Island Water Supply Extension.

Removal Actions Initiated Post FFA:

Monitoring data identified 11 residents exceeding the 2 ppb drinking water health criteria. Bottled water was provided and plans were finalized to complete the engineering evaluation/cost analysis (EE/CA) and extend the current waterline system. The Decision Memorandum was approved on 13 January 93. The contract was awarded September 93. Construction began in the fall of 1993 and was completed in the fall of 1994.

Geophysics and pit excavation uncovered numerous gravel mines which were experimental items produced during the Vietnam war. These mines are found in and around the exclusion zone in the burning ground. The previous fence was 3 to 4 ft high and provided little safety. The installation operated as an open post and a removal action to secure the gravel mine area with an 8 to 12 ft high security fence was initiated. Construction started in fourth quarter of FY93 and was completed in November 94.

Twenty-five hot spots of TNT-contaminated soils were identified during the December 1992 Phase I RI. The areas were excavated to the levels established during the incineration of sampling and off-post incineration of sampling and off-post incineration.

Current REM/IRA/RA

Interim Remedial Action:

A ROD for OU1 was signed 18 November 94. The explosives-contaminated groundwater plume was identified and designated on the NPL. The ROD establishes the use of on-site extraction in the hot zones (source) of the plume and containment at the distal end of the plume. ESD changed the discharge point from the Platte River to an on-post canal to Silver Creek. GAC is used to treat the explosives and the effluent is discharged to on-post canals. The extraction well rate is 750 gallons per minute (gpm) on-post. An amendment to the ROD was signed to delete all off-post extraction and treatment due to reduced contaminant levels attributed to natural attenuation processes. Institutional controls (including negative easements) were initiated to restrict utilization of drinking water from the contaminated aquifer. Institutional controls on-post includes negative easements.

Future REM/IRA/RA

CAAP-008 LTM to 2015
CAAP-009 LTM
CAAP-010 RA(O) to 2027

Community Involvement

HQ, IOC and the U.S. Army Environmental Center conducted community interviews in the spring of 1995 to determine interest in a RAB. The initial RAB orientation session was held at Grand Island City Hall, 19 April 1995. News releases were printed in the paper and announced on TV and radio. Fact sheets were printed and distributed in the community.

A public meeting was held for comment concerning OU1 ROD Amendment in September 2001. No citizens attended. Less than a dozen citizens attended the initial meeting with an equal number of government personnel on hand. Many of the citizens were interested in contracts and doing business with the Army.

Follow on RAB meetings in 1998 and 1997 resulted in poor attendance (as few as three citizens) with very little media interest.

The installation (CHAAP) does not plan on pursuing a RAB, due to limited local interest.

The Technical Review Committee (TRC) was discontinued due to lack of public attendance at meetings.

There will be public availability sessions for each FS, PP, and ROD signing. Public affairs statements are issued after significant events. Public notice of annual LTM sampling results.

CHAAP, regulators and advisory members of Reuse Committee work together on decisions.

Public notification of CHAAP transfer to USACE.

Explosive safety actions: Media Day

- a. Preflash of Load Line 1, 2 and 3; tour of a Load Line
- b. Controlled burn and controlled media access
- c. Follow-up